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FACSIMILE TRANSMITTAL COVER SHEET

August 25, 2009

To: Examiner Eric L. Bolda

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From: Robert L. Epstein

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PTO/SB/17 (10-08)

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Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL

For FY 2009

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 130.00

Complete if Known

Application Number 10/551,597
Filing Date 10/2/2006
First Named Inventor CAPOULI ET, Sylvain
Examiner Name Eric L. Bofa
Art Unit 3663
Attorney Docket No. 2085-101

METHOD OF PAYMENT (check all that apply)

☐ Check ☒ Credit Card ☐ Money Order ☐ None ☐ Other (please identify):
☒ Deposit Account Deposit Account Number: 502978 Deposit Account Name: EPSTEIN DRANGEL
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FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	
Utility	330	165	540	270	220	110	
Design	220	110	100	50	140	70	
Plant	220	110	330	165	170	85	
Reissue	330	165	540	270	650	325	
Provisional	220	110	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description

Each claim over 20 (including Reissues)
Each independent claim over 3 (including Reissues)
Multiple dependent claims

Total Claims	Extra Claims	Fee (\$)	Fee Paid (\$)	Multiple Dependent Claims	Fee (\$)	Fee Paid (\$)
- 20 or HP =	x	=		- 26		
HP = highest number of total claims paid for, if greater than 20.				220	110	
Indep. Claims	Extra Claims	Fee (\$)	Fee Paid (\$)	390	195	
- 3 or HP =	x	=				
HP = highest number of independent claims paid for, if greater than 3.						

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$270 (\$135 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
- 100 =	/ 50 =	(round up to a whole number) x		

4. OTHER FEE(S)

Non-English Specification, \$130 fee (no small entity discount)

Other (e.g., late filing surcharge); Petition for Extension on Time

Fees Paid (\$)

\$ 130.00

SUBMITTED BY

Signature

Name (Print/Type) Robert L. Epstein

Registration No.

(Attorney/Agent) 26451

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Date May 26, 2009

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is not related to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending on the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEE OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

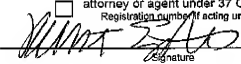
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PTO/SB/22 (04-08)

Approved for use through 08/31/2009. OMB 0651-0031

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PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)		Docket Number (Optional)	
FY 2009		2085-101	
(Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4281))			
Application Number 10/551,597		Filed 10/2/2006	
For AN OPTICAL DEVICE FOR SURPRESSING DOUBLE BAYLEIGH BACKSCATTERING NOISE			
Art Unit 3663		Examiner Eric L. Bolda	
This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.			
The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):			
	Fee	Small Entity Fee	
<input checked="" type="checkbox"/> One month (37 CFR 1.17(a)(1))	\$130	\$65	\$ 130.00
<input type="checkbox"/> Two months (37 CFR 1.17(a)(2))	\$490	\$245	\$ _____
<input type="checkbox"/> Three months (37 CFR 1.17(a)(3))	\$1110	\$555	\$ _____
<input type="checkbox"/> Four months (37 CFR 1.17(a)(4))	\$1730	\$865	\$ _____
<input type="checkbox"/> Five months (37 CFR 1.17(a)(5))	\$2350	\$1175	\$ _____
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.			
<input type="checkbox"/> A check in the amount of the fee is enclosed.			
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I am the <input type="checkbox"/> applicant/inventor.			
<input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71.			
Statement under 37 CFR 3.73(b) is enclosed (Form PTO/SB/96).			
<input checked="" type="checkbox"/> attorney or agent of record. Registration Number <u>26451</u>			
<input type="checkbox"/> attorney or agent under 37 CFR 1.34.			
Registration number if acting under 37 CFR 1.34 _____			
		May 26, 2009	
Robert L. Epstein		Date	
Typed or printed name		(212) 292-5390	
		Telephone Number	

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required. See below.

☒ Total of 1 forms are submitted.

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Doc Code: TRAN.LET

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PTO/SB/21 (04-08)

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TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	10/551,007
	Filing Date	10/2/2006
	First Named Inventor	CAPOULLIET, Sylvain
	Art Unit	3603
	Examiner Name	Eric L. Bokor
	Attorney Docket Number	2086-101
Total Number of Pages in This Submission		

ENCLOSURES (Check all that apply)	
<input checked="" type="checkbox"/> Fee Transmittal Form <input checked="" type="checkbox"/> Fee Attached <input checked="" type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input checked="" type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Reply to Missing Parts/Incomplete Application <input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation <input type="checkbox"/> Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____ <input type="checkbox"/> Landscape Table on CD <input type="checkbox"/> After Allowance Communication to TC <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): Return Receipt Postcard
Remarks	
SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm Name	EPSTEIN DRANGEL BAZERMAN & JAMES, LLP
Signature	
Printed name	Robert L. Epstein
Date	May 26, 2009
Reg. No.	26451

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Date	5/26/2009

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IN THE UNITED STATES PATENT AND TRADE MARK OFFICE

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In re Patent Application of
SYLVAIN CAPOUILLIET

Serial No.: 10/551,597

New York, New York 10165
May 26, 2009

Filed: 10/2//2006

For: AN OPTICAL DEVICE FOR
SURPRESSING DOUBLE BAYLEIGH
BACKSCATTERING NOISE

Examiner: Eric L. Bolda

Art Unit: 3663

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2085-101

COMMISSIONER FOR PATENTS
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AMENDMENT

Responsive to the Office Action dated February 2, 2009, please amend the
application as follows:

AMENDMENTS TO THE CLAIMS

1. (currently amended) An optical signal processor device (14) for use with means (10) for optically transmitting an information-carrying signal (S_1 , S_2 , S_{21} , S_3) and a back-propagated pump signal for amplifying said information-carrying signal, said device comprising means (20, 22) for suppressing backscattered signals (RS_1 , RS_2 , RS_{21} , RS_3) in the optical transmission means (10) and comprising being characterized in that it comprises:

an optical propagation medium (16) arranged for being connected in parallel with the optical transmission means (10),

divertor means (18, 20) being arranged for connecting, in parallel, at two connection points, the optical propagation medium to the optical transmission means and being arranged for diverting to this optical propagation medium, ~~any~~ said pump signal and a Rayleigh backscattering signal propagating in the opposite direction of the information-carrying signal in the optical transmission means,

at least a portion of the means for optically transmitting an information-carrying signal extending between the two divertor means, and

wavelength discrimination means for discriminating between a said pump signal intended to be back-propagated in the optical transmission means and a said Rayleigh backscattering signal, these signals being diverted by the divertor means to the optical propagation medium, said discrimination means being connected to the optical propagation medium, between the two connection points, to suppress the Rayleigh backscattering signal by allowing only the pump signal to pass.

2. (currently amended) An optical signal processor device (14) according to claim 1, characterized in that the divertor means comprise two circulators (18, 20), each disposed at one of the points of connection of the optical propagation medium (16) to the optical transmission means (10), to cause the information-carrying signal to travel in the optical transmission means (10), and to cause the back-propagated signals to travel in the optical propagation medium (16) between the two circulators.

3. (currently amended) An optical signal processor device (14) according to claim 1, characterized in that it further comprises an optical functional module (24) disposed on the optical transmission means (10) between the two circulators (18, 20).

4. (currently amended) An optical signal processor device (14) according to claim 3, characterized in that the optical functional module (24) comprises an optical add/drop multiplexer for adding and dropping wavelengths and/or an optical switch and/or a polarization mode dispersion compensator and/or an optical regenerator.

5. (currently amended) An optical signal processor device (14) according to any one of claims 1 to 4, characterized in that the signal discrimination means (22) comprise a band-pass filter centered on the wavelength of the Raman pump signal (P) intended to be propagated in the optical transmission means (10).

6. (currently amended) An optical signal processor device (14) according to claim 4, characterized in that the signal discrimination means (22) comprise a Bragg grating fiber

whose reflection wavelength corresponds to the wavelength of the Rayleigh backscattering signal derived from the information-carrying signal.

7. (currently amended) An optical signal processor device (14) according to claim 6, for use with means (10) for optically transmitting a plurality of information-carrying signals (S_1, S_2, S_3), which device is characterized in that the signal discrimination means comprise a plurality of Bragg gratings (22a, 22b, 22c) disposed in series with reflection wavelengths corresponding to respective wavelengths carrying backscattered signals (RS_1, RS_2, RS_3) derived from the plurality of information-carrying signals.

8. (currently amended) An optical signal processor device (14) according to claim 6, for use with means (10) for optically transmitting a plurality of information-carrying signals (S_1, S_2, S_3) and characterized in that the signal discrimination means comprise an optical signal demultiplexer (26a) adapted to transmit only certain signals of predetermined wavelengths and associated with an optical signal multiplexer (26b).

9. (currently amended) An optical signal processor device (14) according to claim 8, characterized in that the optical transmission means (10) include a line optical fiber and the optical propagation medium (16) comprises an optical fiber portion.

10. (currently amended) An optical signal transmission installation comprising a distributed Raman amplification system, characterized in that it further comprises an optical signal processor device (14) according to claim 9.

11. (currently amended) An optical signal processor device (14) for use with means (10) for optically transmitting a plurality of information-carrying signals propagating in optical transmission means (10) at different wavelengths (S1, S2, S3) and a plurality of back-propagated pump signals for amplifying said information-carrying signal, said device comprising :

means (20, 22) for suppressing backscattered signals (RS1, RS2, RS3) in the optical transmission means (10),

an optical propagation medium (16), and

divertor means (18, 20) arranged for connecting, in parallel, at two connection points, the optical propagation medium (16) to the optical transmission means (10), and suitable for diverting, to said optical propagation medium (16), the back-propagated signals (P1, P2, P3; RS1, RS2, RS3) in the optical transmission means (10), in which the backscattered signal suppression means are means (22) for discriminating between a plurality of pump signals (P1, P2, P3) intended to be back-propagated in the optical transmission means (10) and Rayleigh backscattering signals (RS1, RS2, RS3), said discrimination means (22) being connected to the optical propagation medium (16) to suppress the Rayleigh backscattering signals (RS1, RS2, RS3) by filtering that passes the pump signals (P1, P2, P3) only.

12. (currently amended) An optical signal processor device arranged for being fitted to means for optically transmitting an information-carrying signal and a back-propagated pump signal for amplifying said information-carrying signal, said device comprising

_____ means for suppressing backscattered signals in the optical transmission means;
and being characterized in that it comprises:

an optical propagation medium arranged for being connected in parallel with the optical transmission means,

divertor means being arranged for connecting, in parallel, at two connection points, the optical propagation medium to the optical transmission means, the divertor means comprising two circulators, each disposed at one of the connection points, to cause the information-carrying signal to travel in the optical transmission means, and to cause any back propagated signal to travel in the optical propagation medium between the two circulators,

at least a portion of the means for optically transmitting an information-carrying signal extending between the two circulators, and

wavelength discrimination means for discriminating between said pump signal intended to be back-propagated in the optical transmission means and a Rayleigh backscattering signal, these signals being diverted by the divertor means to the optical propagation medium, said discrimination means being connected to the optical propagation medium, between the two connection points, to suppress the Rayleigh backscattering signal by allowing only the pump signal to pass.

13. (currently amended) An optical signal processor device arranged for being fitted to means for optically transmitting an information-carrying signal and a back-propagated pump signal for amplifying said information-carrying signal, said device comprising:

_____ means for suppressing backscattered signals in the optical transmission means and being characterized in that it comprises:

an optical propagation medium arranged for being connected in parallel with the optical transmission means,

divertor means being arranged for connecting, in parallel, at two connection points, the optical propagation medium to the optical transmission means and being arranged for diverting to said optical propagation medium the said back-propagated signals in the optical transmission means,

at least a portion of the means for optically transmitting an information-carrying signal extending between the two divertor means, and

discrimination means for discriminating between said pump signal ~~intended to be backpropagated in the optical propagation means~~ and a Rayleigh backscattering signal, said discrimination means being connected to the optical propagation medium to suppress by filtering the Rayleigh backscattering signal and to allow only the said pump signal to pass, the signal discrimination means comprising a Bragg grating fiber whose reflection wavelength corresponds to the wavelength of the said Rayleigh backscattering signal derived from the information-carrying signal.

14. (currently amended) An optical signal processor device arranged for being fitted to means for optically transmitting an information-carrying signal and a back-propagated pump signal for amplifying said information-carrying signal, said device comprising:

means for suppressing backscattered signals in the optical transmission means, and being characterized in that it comprises:

an optical propagation medium arranged for being connected in parallel with the optical transmission means,

divertor means being arranged for connecting, in parallel, at two connection points, the optical propagation medium to the optical transmission means and being arranged for diverting to said optical propagation medium the said back-propagated pump signals in the optical transmission means,

at least a portion of the means for optically transmitting an information-carrying signal extending between the two divertor means, and

discrimination means for discriminating between a said pump signal ~~intended to be backpropagated in the optical propagation means~~ and a Rayleigh backscattering signal, said discrimination means being connected to the optical propagation medium to suppress by filtering the Rayleigh backscattering signal and to allow only ~~the~~ said pump signal to pass, the signal discrimination means comprising a band-pass signal centered on the wavelength of the Raman pump signal intended to be propagated in the optical transmission means.

15. (new) An optical signal processor device according to claim 1, wherein said means for optically transmitting the information-carrying signal are adapted to transmit a plurality of information-carrying signals propagating at different wavelength and wherein said discrimination means are adapted to suppress a plurality of Rayleigh backscattering signals each associated with a corresponding information-carrying signal while allowing a plurality of pump signals to pass, each pump signal being associated with a corresponding information-carrying signal.

REMARKS

Claims 1, 2, 11 and 12 have been rejected under 35 USC 102(b) as anticipated by Liang or alternatively, under 35 USC 103(b) as unpatentable over Liang in view of Christodoulides.

The Examiner has rejected the independent claims based on Liang either because Liang discloses all the features of claim 1 (considering that the pump signal is not actually a feature of claim 1, see page 3 of the Office Action), or because the invention defined in the independent claims would be obvious in view of Liang when combined with the pump signal of Christodoulides.

All of the independent claims have been amended to recite the use of a pump signal is an explicit feature. Accordingly, the rejection based upon Liang as anticipation is clearly overcome.

As to the rejection based upon obviousness, it must be first pointed out that Liang (and its Figure 3, in particular) relates to the case where two information-carrying signals are transmitted in opposite direction (see e.g. column 2, lines 37-43 and column 9, lines 36-49) and teaches that this simple use of counter-propagating signals would be sufficient to "*significantly* [reduce]" the Raman effect (see again column 2, lines 37-53).

The teachings provided in Liang would therefore obviously not apply to a pump signal propagating in a direction opposite from the information-carrying signal because the pump signal is meant to amplify the information-carrying signal. Accordingly, one skilled in the art would know that applicant's invention is significantly different from the signal solution previously used for an information-carrying signal such as taught by Liang.

As a result, there is no teaching in Liang that would lead one to apply discrimination means to a diverted pump signal.

Turning now to Christodoulides, this reference merely teaches to use circulators to combine an information-carrying signal and a pump signal within an optical fiber where a high pass filter is meant to remove noise (see e.g. column 4, line 52 to column 5, line 16). According to Christodoulides, the filtering applies in the portion where the pump signal P and the information-carrying signal S are combined (see e.g. column 5, lines 8-10) and Christodoulides therefore teaches away from the claimed invention where the wavelength discrimination means apply in a portion where the pump signal has been separated from the information-carrying signal, because of the diverter means.

For the same reason, the proposed combination of the two references would be inappropriate because Liang teaches to separate signals propagating in opposite directions whereas Christodoulides teaches to apply a same filter to signals propagating in opposite directions.

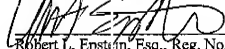
Considering for completeness the rather specific embodiment of Figure 12 of Christodoulides, it may be pointed out that here again that this reference teaches away from the claimed invention as no filtering applies in path 74 used by the pump signal, as opposed to the claimed invention where the discrimination means apply to the optical propagation medium where the pump signal is diverted by the diverter means.

Accordingly, neither Liang nor Christodoulides could be considered to suggest the invention as now defined in the amended claims.

New claim 15 has been presented. New claim 15 is dependent upon claim 1, as amended and therefore defines over the cited art for the same reasons as claim 1 as

amended, noted above. Further, claim 15 requires that the discriminating means suppresses the Rayleigh backscattering signals associated with the corresponding information-carrying signal while allowing the pump signals to pass.

Respectfully submitted,



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